

**CLAIMS**

1. A method for transmitting data from a mobile terminal to a radio access network of a mobile communication system, the mobile terminal comprising a medium access control entity, the method comprising the steps of:  
  
establishing a radio bearer between the mobile terminal and the radio access network for transmitting said data via a transport channel,  
  
assigning to each of a plurality of different scheduling modes usable by the medium access control entity a priority for the radio bearer, and  
  
transmitting said data based on the priority assigned to the respective scheduling mode used by the medium access control entity for the radio bearer.
2. The method according to claim 1, further comprising the step of selecting by the medium access control entity a transport format combination based on the priority assigned to the respective scheduling mode used, wherein the transport format combination comprises a transport format used for transmitting said data via said transport channel, and  
  
wherein the step of transmitting transmits the data using said transport format.
3. The method according to claim 1, wherein data from said radio bearers and other radio bearers is transmitted via said transport channel, and  
  
wherein the method further comprises the step of multiplexing said data to the transport channel based on the priority assigned to the respective scheduling mode used.
4. The method according to claim 3, further comprising the step of selecting by the medium access control entity a transport format combination, wherein the transport format combination comprises a transport format used for transmitting said data via said transport channel, and  
  
wherein the step of transmitting transmits the multiplexed data using said transport format.

5. The method according to one of claims 1 to 4, wherein said priorities are assigned during the establishment of the radio bearer.
6. The method according to one of claims 1 to 5, wherein said radio bearer comprises a radio link control entity and at least one logical channel for providing said data from the radio link control entity to the medium access control entity.
7. The method according to claim 6, further comprising the step of receiving a radio bearer control message from the radio access network, wherein the radio bearer control message comprises a plurality of information elements indicating the priorities of a logical channel for each of said plurality of scheduling modes.
8. The method according to claim 7, wherein the plurality of information elements is comprised within an information element "RB mapping info".
9. The method according to claim 7 or 8, further comprising the step of establishing by a radio resource control entity of the mobile terminal the radio bearer in accordance with the set of parameters indicating the priorities of a logical channel of the radio bearer for each of said plurality of scheduling modes received in the radio bearer control message.
10. The method according to one of claims 7 to 9, wherein the radio bearer control message is a radio bearer setup message or a radio bearer reconfiguration message.
11. The method according to claim 6, wherein the radio link control entity is configured with a plurality of logical channels, each of said logical channels being used to provide data PDUs carrying said transmission data and each of said logical channels being associated to one of said plurality of scheduling modes.
12. The method according to claim 11, further comprising the step of providing said data from the radio link control entity to the medium access control entity via a logical channel being associated to the scheduling mode used for transmitting the data.

13. The method according to claim 11 or 12, further comprising the steps of:  
  
selecting a scheduling mode for scheduling the data,  
  
determining by the medium access control entity the logical channel associated to the selected scheduling mode, and  
  
requesting by the medium access control entity from said radio link control entity said data to be provided via said determined logical channel.
14. The method according to claim 13, further comprising the step of providing said data from the radio link control entity to the medium access control entity via the requested logical channel.
15. The method according to one of claims 12 to 14, wherein the scheduling mode is selected by the mobile terminal or a selection is signalled from the radio access network.
16. The method according to one of claims 1 to 15, wherein said plurality of scheduling modes comprises a rate controlled scheduling mode and a time and rate controlled scheduling mode.
17. A method for transmitting data from a mobile terminal to a radio access network of a mobile communication system, the mobile terminal comprising a medium access control entity, the method comprising the steps of:  
  
establishing a radio bearer between the mobile terminal and the radio access network for transmitting said data via a transport channel,  
  
assigning a priority to the radio bearer, and  
  
transmitting said data based on the priority assigned to the radio bearer and a flag set in the medium access control entity indicating one of a plurality of scheduling modes used by the medium access control entity for the radio bearer.
18. The method according to claim 17, further comprising the step of selecting by the medium access control entity a transport format combination based on the assigned priority and the flag, wherein the transport format combination

comprises a transport format used for transmitting said data via said transport channel.

19. The method according to claim 17, wherein data from said radio bearers and other radio bearers is transmitted via said transport channel, and

wherein the method further comprises the step of multiplexing said data to the transport channel based on the priority assigned to the respective radio bearer and the flag.

20. The method according to claim 19, further comprising the step of selecting by the medium access control entity a transport format combination, wherein the transport format combination comprises a transport format used for transmitting said data via said transport channel, and

wherein the step of transmitting transmits the multiplexed data using said transport format.

21. The method according to one of claims 17 to 20, wherein in case the flag is set a higher priority than the assigned priority and in case the flag is not set the assigned priority is used.

22. The method according to one of claims 17 to 21, wherein the flag indicates whether a rate controlled scheduling mode or a time and rate controlled scheduling mode is used.

23. The method according to claim 15 or 22, wherein the rate controlled scheduling mode is assigned a lower priority than the time and rate controlled scheduling mode.

24. The method according to one of claims 1 to 23, wherein the mobile communication system is a UMTS system and wherein said data is transmitted via an E-DCH.

25. A mobile terminal for transmitting data transmitted to a radio access network of a mobile communication system via a wireless link, the mobile terminal comprising:

a medium access control entity,

processing means for establishing a radio bearer between the mobile terminal and the radio access network for transmitting said data via a transport channel,

wherein the processing means is adapted to assign to each of a plurality of different scheduling modes usable by the medium access control entity a priority for the radio bearer, and

the transmitter for transmitting said data based on the priority assigned to the respective scheduling mode used by the medium control entity for the radio bearer.

26. The mobile terminal according to claim 25, further comprising means adapted to perform the steps of the method according to one of claims 1 to 16, 23 or 24.

27. A mobile terminal for transmitting data to a radio access network of a mobile communication system via a wireless link, the mobile terminal comprising:

a medium access control entity,

processing means for establishing a radio bearer between the mobile terminal and the radio access network for transmitting said data via a transport channel, and for assigning a priority to the radio bearer,

the transmitter for transmitting said data based on the priority assigned to the radio bearer and a flag set in the medium access control entity indicating one of a plurality of scheduling modes used by the medium access control entity for the radio bearer.

28. The mobile terminal according to claim 27, further comprising means adapted to perform the steps of the method according to one of claims 18 to 24.

29. A computer readable medium for storing instructions that, when executed by a processor, cause the processor to transmit data from a mobile terminal to a radio access network of a mobile communication system via a wireless link, by:

establishing a radio bearer between the mobile terminal and the radio access network for transmitting said data via a transport channel,

assigning to each of a plurality of different scheduling modes usable by a medium access control entity a priority for the radio bearer, the medium access control entity being comprised by the mobile terminal, and

transmitting said data based on the priority assigned to the respective scheduling mode used by the medium control entity for the radio bearer.

30. The computer readable medium according to claim 29, further storing instructions that, when executed by the processor, cause the processor to perform the steps of the method according to one of claims 1 to 16, 23 or 24.

31. A computer readable medium for storing instructions that, when executed by a processor, cause the processor to transmit data from a mobile terminal to a radio access network of a mobile communication system via a wireless link, by:

establishing a radio bearer between the mobile terminal and the radio access network for transmitting said data via a transport channel,

assigning a priority to the radio bearer, wherein the priority indicates the priority based on which a transport format for the transport channel is selected,

transmitting said data based on the priority assigned to the radio bearer and a flag set in the medium access control entity indicating one of a plurality of scheduling modes used by the medium access control entity for the radio bearer.

32. The computer readable medium according to claim 31, further storing instructions that, when executed by the processor, cause the processor to perform the steps of the method according to one of claims 18 to 24.

33. A method comprising the following steps performed by a mobile terminal in a mobile communication system:

establishing at least one radio bearer between the mobile terminal and a radio access network for transmitting data via a transport channel,

associating each of the at least one established radio bearer with at least one logical channel, wherein each of the at least one logical channel of a radio bearer has a flag,

assigning to each logical channel a priority and

setting the at least one flag of the at least one logical channel depending on the scheduling mode of the associated radio bearer.

34. The method according to claim 33 further comprising the steps of:

determining whether the flag of the at least one logical channel associated to the at least one radio bearer is set,

selecting a transport format combination to be used for the transmission of data from each of the at least one logical channel associated to the at least one radio bearer based on the determination result of the flag and the priority assigned to the logical channel,

multiplexing said data from the at least one logical channel to the transport channel based on the flag and the respective priority assigned to the at least one logical channel and

transmitting said multiplexed data using the selected transport format combination via the transport channel.

35. The method according to claim 33 or 34, further comprising the step of receiving signaling information from the radio access network indicating the scheduling mode of the at least one radio bearer to be used by the mobile terminal, and

wherein in the step of setting the at least one flag of the at least one logical channel depending on the scheduling mode of the associated radio bearer, the at least one flag is set according to the signaling information.

36. The method according to one of claims 33 to 35, wherein the flag assigned to a respective logical channel indicates whether to prioritize the data transmission on the respective logical channel during the selection of a transport format combination.
37. The method according to one of claims 33 to 36, wherein the transport channel is an enhanced dedicated uplink channel E-DCH.
38. A mobile terminal for use in a mobile communication system comprising:
- radio bearer establishment means for establishing at least one radio bearer between the mobile terminal and a radio access network for transmitting data via a transport channel,
- association means for associating each of the at least one established radio bearer with at least one logical channel, wherein each of the at least one logical channel of a radio bearer has a flag,
- assigning means for assigning to each logical channel a priority and
- setting means for setting the at least one flag of the at least one logical channel depending on the scheduling mode of the associated radio bearer.
39. The mobile terminal according to claim 38, wherein the mobile terminal further comprises means adapted to perform the method according to one of claims 33 to 37.
40. A computer-readable medium storing instructions that, when executed by a processor of a mobile terminal, cause the mobile terminal to:
- establish at least one radio bearer between the mobile terminal and a radio access network for transmitting data via a transport channel,
- associate each of the at least one established radio bearer with at least one logical channel, wherein each of the at least one logical channel of a radio bearer has a flag,
- assign to each logical channel a priority and



set the at least one flag of the at least one logical channel depending on the scheduling mode of the associated radio bearer.

41. The computer-readable medium according to claim 40, further storing instructions that, when executed by the processor of the mobile terminal, cause the mobile terminal to perform the steps of the method according to one of claims 33 to 37.